Oil & Gas Development in South Africa:
Key environmental issues & related controls

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Road Map

• Overview of the Petroleum Agency SA
• Upstream Petroleum Development: Main activities
• Key Environmental Issues & Concerns
• Controls
• Challenges
• Petroleum Development in relation to the management of BLCME
• Conclusion/End
An Overview of the Petroleum Agency SA

• PASA - designated in terms of the Mineral and Petroleum Resources Development Act of 2002 (Act No 28 of 2002)

• Main functions:
  – Promotion of exploration for petroleum resources and their optimal development,
  – Regulation of exploration and production activities,
  – Acts as custodian of the petroleum exploration and production database.

• Operates under two Ministries i.e. Mineral Resources & Energy

• Areas of responsibility: Onshore & Offshore
Exploration & Production Activities within Benguela Current
Upstream Petroleum Development

- Searching for petroleum resources is a puzzle

- In order to understand the whole picture, one needs to get all pieces in the right place
• To determine productivity: Source, generation, migration, suitable reservoir rock, etc.

• PASA’s mandated to process 4 types of permits/licences
  – Technical Cooperation Permit (TCP)
  – Reconnaissance Permit (RP)
  – Exploration Right (ER)
  – Production Right (PR)

• TCP: Desktop studies & valid for 1 year
• RP: geological & geophysical surveys (1 year)
• ER: seismic survey and well drilling (3yrs - renewable)
• PR: appraisal & developmental activities (30 years)
1. Seismic Survey (a number of seismic surveys planned)

2. Drilling

- Borehole drilling
- Cuttings assessment
- Well testing

(Over 300 drilled to date)
Appraisal & Development

Appraisal: additional wells
Production platforms/ floating rigs
Treatment facilities
Flow lines
(1 production right – B.C 
& 5 rights – Aghulus)
Key Environmental Issues

Is oil & gas exploration/production a messy business?

• Potential impacts determined by the ff.:
  – Stage of the process
  – Size and complexity of operation
  – Nature and sensitivity of the surrounding environment
  – Planning (effectiveness or lack thereof)
  – Mitigation techniques

• Key issues
  – Discharges to sea
    • Drill cutting and fluids (WBFs vs NADFs)
    • Produced water containing oil and chemicals
    • Drainage/bilge water
    • Sewage
    • Cooling water
– Solid waste: hazardous & general waste
– Emergency incidents: Accidental oil spillages, blowouts, explosions, fire, refuelling, acts of God (natural disasters), etc.
– Air emissions: flaring, venting, etc. thereby having an effect on climate change
– Noise: acoustic sources, disturbance/physiological impacts to marine fauna
– Interference with other resource users such as fishing industry, shipping industry, etc.

– Ballast water (seismic vessels) – globally becoming an issue shipping industry
Mishaps occur & if environmental issues are unmanaged properly these could be the results:
Controls

One of PASA’s values relates to 'Active Regard for the Natural Environment':

• Legal Framework:
  i) National Laws & regulations
  - Mineral & Petroleum Resources Development Act
    (EIAs/EMPR, Monitoring, Closure certificates, Financial Provisions, conservation areas, etc.)
  - National Environmental Management Act (*EIA listed activities, duty of care, protected areas, waste management, air quality, environmental management principles, etc.*)
  - Marine Pollution (Prevention of pollution from ships) Act of 1986
  - Marine Pollution (control & civil liability) Act of 1981
• NEM: Protected Areas Act (*restricts certain activities within protected areas*)
• NEM: Air Quality Act (*continuous flaring prohibited*)
• NEM: Waste Act (*unauthorised disposal, industry waste management plans, listed activities*)

• Various authorities: Department of Water & Environmental Affairs; Agriculture, Fisheries & Forestry, Transport, South African Maritime Safety Authority (SAMSA), Mineral Resources, Energy, etc.
• Lead authority’s responsibility to advise & ensure operators fulfil all applicable obligations in terms of the aforementioned statutes.
ii) International Agreements & Conventions
   - International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78: ANNEX I – VI Regulations: Pollution by oil, noxious liquid substances, sewage, garbage, air pollution from ships, etc.)
   - International Convention on Civil Liability for Oil Pollution Damage

iii) Industry/ Company Standards/ Contingency Plans:
iv) Application of general principles in legislation
- Precautionary principle
- Polluter Pays Principle
- Continuous improvement
- Risk avoidance/reduction
- Best Available Technology/ Best Environmental Practise

v) Best Practices during operations:
- Use of Water Based Fluids
- Avoid accidental discharges
- Stay below discharge limits
- Emergency Preparedness Plans
- Oil spill contingency plans
- Limit flaring
- Responsible waste management
• Monitoring

• **Holders’ obligations**
  - Baseline Studies
  - Monitoring surveys: Subsea Infrastructure Inspections, Marine biodiversity survey using ROVs, discharges (produced/bilge h20), flare emissions, solid waste, etc.
  - Continuous Reporting: daily, monthly, quarterly, etc.
  - EMPR performance assessments

• **PASA/ Authorities obligations**
  - Inspections/ Audits/ Third party verification
  - Take action in case of non-compliances
    - Issue directives
    - Suspension of permits/rights
    - Poor performance – affect future applications
• End of Operations:
  – Operators responsibility does not stop when the reservoir is empty or when there are no discoveries
  – Necessary plans required for decommissioning/closure
  – Requirement: to leave the area to its pre-existing condition or even better

  – Post closure monitoring – Obligatory!
Challenges

- Good but fragmented regulatory framework
- Cooperation among various authorities
- Proposed conservation areas, including MPAs, where there are existing permits/rights
- SA readiness for similar incidents such as Deep Horizon incident – Gulf of Mexico
- Accessibility? Monitoring & audits
- Capacity vs. growing activity & evolving technology
- Lack of critical data *challenge/opportunity*
Petroleum Development & Management of BCLME

- Petroleum Industry is conscious of the need to:
  - Exploit resources in an environmentally sustainable manner;
  - Operate such that the integrity of the marine ecosystem (including Benguela Large Marine Ecosystem) is maintained;
  - Minimise risks of the long term and irreversible damage.

- Principle of continual improvement: more research, compliance monitoring, stricter regulations, continuous risk analysis

- Learning from other regions and jurisdictions where petroleum development is mature

NB: Cooperation among the 3 countries & various industries will provide a platform on how to do it together the right way!!
Thank you

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